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—the test is the attempted fitting in of the object. In all adequate perception this is realized. The object itself is given in perception and *into* the idea. This filling in of the meaning of an idea is a unique experience; in it, or in the potentiality of it, consists the possession of the truth. This experience either as a "disposition" (felt possibility) or as an actuality *conditions* certainty as the value of knowledge. *This* is the truth-character of the idea; its *value,* the positive feeling which accompanies it, has in itself no cognitive importance.

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ART AND SCIENCE

"BETTER to take pleasure in a rose than to put its root under a microscope," said Oscar Wilde.

The defenders of the uniqueness of art, the absoluteness of beauty, and the indescribable character of appreciation hold that science by its very nature and the presuppositions of its method is unfit to understand or explain, much less interpret and evaluate, artistic and esthetic objects—either because the methods of science are too coarse and crude to sense the subtle nuances of beauty, or because science is only concerned with describing relations and assigning causes and is thus precluded from knowing the reality itself, or, again, because the knowledge which science gains is always abstract and generic whereas the thing of beauty is concrete and individual.

I

Ruskin held that the beauty of natural objects contains qualities which so far have eluded the description and classification of the man of science. The method of the artist, he says, is intuitive. "His faculty of perception penetrates far deeper than the instrument of the student. The labor of the whole geological society for the last fifty years has but now arrived at the ascertainment of those truths respecting mountain-form which Turner saw and expressed with a few strokes of a camel's-hair pencil fifty years ago when he was a boy. . . . The knowledge of all the laws of the planetary system, and of all the curves of the motions of projectiles, would never enable a man of science to draw a waterfall or a wave." "Would the teaching of philosophers who describe this world in terms so abstruse, so gray, and so cold, ever lead us to imagine it to be such a shimmer of foliage, such a flood of sunshine, such a pulsation of life, such a tremor of eyelids and fire of glances, as indeed constitute all its value? Philosophers construct systems which explain everything in the world except its charm. They analyze all the secret forces of the soul except its power of admiration. They dissolve all our relations with nature, so-called inanimate, except its power of love.'' Man should look at nature, he continues, ''not as a student, but as a seer . . . with the heart of a lover who seeks only to admire.'' ''What we see, what we know, what we feel, not what we understand—this is esthetic truth as opposed to scientific truth.'' ''Elsa asked his name of Lohengrin, not the number of the muscles of his skin nor the form of his spinal apophyses, and even she asked too much. Lohengrin disappeared. . . . It is the eternal punishment of the scientific spirit taking the place of love. . . . The scientist thinks to discover movement; he stops it. He thinks to command light; he destroys it. He thinks to seize the life of the muscle; he kills it.'' ''The pursuit of science should constantly be stayed by the love of beauty, and accuracy of knowledge by tenderness of emotion.''

If we turn from the artist to the psychologist, we find Professor Münsterberg defending a similar position from a different point of view. In his ''Psychology and Life'' he says: ''To produce an object of real art, a single experience must be disconnected from all association with life, completely isolated. . . . Beauty is the isolation of true reality. Its truth differs from that of science because the latter reports only connections.'' ''Everything in this world is beautiful, and is a joy forever, if it is so transformed that it does not suggest anything else than itself, that it contains all elements for the fulfillment of the whole in itself. We do not ask for the arms and legs of the person whose marble bust the artist gives us, and we do not ask for his complexion, either. We do not ask how the field and forest look outside of the frame of the landscape painting, and we do not ask what the persons in the drama have done before and will do after the story. Our works of art are not in our space and not in our time; their frame is their own world, which they never transcend. Real art makes us forget that the painting is only a piece of canvas, and that Hamlet is only an actor, and not the Prince. We forget the connections, we abstract from all relations, we think of the object in itself; and wherever we do so, we proceed esthetically.''

Professor Royce, in his ''Conception of Immortality,'' by a somewhat different line of reasoning argues that we never can scientifically describe the unique individual characters of any object, and therefore by implication of an art object. We not only can not define or explain the individual, we can not even describe it accurately, since knowledge is always in terms of types, of kinds, of classes. A description must of necessity be in abstract and generic terms, and thereby and therein is not the individual which we seek to define. The artist stands nearer the real, since he immediately embraces its individuality. He has a direct experience of the object and does not seek to describe. "Individuality is something that we demand of our world, but that, in this present realm of experience, we never find. It is the object of our purposes, but not of our attainment; of our intentions, but not of their present fulfillment; of our will, but not of our sense nor yet of our abstract thought; of our rational appreciation, but not of our description; of our love, but not of our verbal confession. We pursue it with the instruments of a thought and of an art that can define only types. . . . The unique eludes us; yet . . . it becomes for us the most real thing."

II

These passages set forth an apparent antagonism of science and art which must be fairly met in any comprehensive statement of esthetic theory. Art stripped of all science would reduce, it would seem, to simple action or feeling, a series of movements or thrills: there is no pure art in this sense. Science, on the other hand, stripped of all relation to feeling and action, would be mere theory or speculation; here too, there is no theory which is absolutely pure or abstract. Anthropology shows us that human experience in the race did not begin with either the esthetic or the scientific, but with a stage in which both were merged in a more immediate attitude. Both fine art and science began with art in the larger sense, a meaning which still clings to the phrase "industrial" or "useful" art. Experience was economic and utilitarian in its inception.

Both science and fine art arose out of art in the etymological sense of skilled workmanship—and they emerged, not successively, but simultaneously, science as a refinement on the side of theoretical, and fine art as a refinement of industrial art on the side of practical control of the instruments of skilled production. The two types of consciousness which correspond to these two attitudes are the esthetic-emotional and the logical-intellectual, each employing both theory and practise, but in different proportions, in the one case in the form of an unanalyzed personal technique, in the other as conscious analytic method.

How, then, we may inquire, are these attitudes related in the treatment of a concrete object? Take Professor Münsterberg's illustration of a wave on the sea. What is the wave to the man of science? He analyzes it into salt and water and other constituents; the water chemically into H_2O and physically into certain pressures, impacts, and other transformations of energy. Is this the reality of the wave? What, on the other hand, is the wave to the artist? It is an object of beauty which occasions a pleasurable emotion. He seeks to convey his appreciation by portraying it on the canvas or otherwise for our contemplation. He tries to find some medium for perpetuating the wave in terms of the emotion he feels. Has he the reality of the wave? Or does each see, and does each miss, a part of its meaning, the true reality of the wave consisting in some combination of their two views?

Is not the true artist always implicitly a scientist and the true scientist an artist? If art seeks to see the particular and the universal in their relationship in the individual, does not science just as truly seek to organize into a system the facts, the isolated elements called particulars, and the laws, the generalized relations called universals? Would not the complete working out of either attitude necessarily embrace the other? Is it not just as degrading to science to restrict its function to the mere assembling of facts as it is to art to attempt to state its creative products in terms of the visible technique? Does not the true scientist feel the artistic side of his work as the great artist becomes scientific in perfecting his method? For certain practical purposes we can point to an art product and say, This is a work of art—this painting, this marble, this sonata—just as we may point to certain provinces of systematic knowledge and identify them as the sciences of mathematics, physics, or biology; but the moment we seek to make such a distinction ultimate or final do we not find that there is no point at which science may not become art and art scientific?

It is sometimes suggested that science is expression for the sake of communication while art is communication for the sake of expression, that science seeks to transform reality into terms which everybody can understand, thus making it social and objectively accessible and verifiable, while the artist thinks only of making the expression true to his own impression. But this will not bear analysis, since great art also is representative and typical. Both art and science necessarily imply a subjective factor: the personal equation is inevitable in all experience, for the object or idea or whatever enters into our consciousness must be modified by that very relationship. No one could possibly *know* an object in entire isolation, since the very fact of knowledge establishes a relation that must be taken into account in a statement of the full reality of the object. Not even the man of science can totally eliminate this personal element, though for his purposes he may reduce it to a negligible quantity.

And might not the function of the frame of a picture be stated as just the opposite of what Professor Münsterberg ascribes to it? We select frames which tone in with the environment. The fact that we fail to recognize the function of the frame in relating the picture to the context simply shows that the connections are so thoroughly there and taken for granted that they may be ignored. The artistic frame is not the one which is intrinsically beautiful, but one which "brings out" the values of the painting, one which so fits in with the surroundings, either by resemblance or contrast, that the frame itself is inconspicuous; that is, serves so to mediate between the picture and the environing objects that the center of interest is in the painting itself. Of course, in a sense, the frame does isolate the picture, but it does this by connecting it harmoniously with the context, and the main aim is not the isolation, but the synthesizing of the values inside with those outside. This is why, wherever possible, the frame is dispensed with, its presence being a tacit acknowledgment that the painting is not in its artistically inevitable setting.

III

The difference between art and science, therefore, must be one of emphasis rather than one of subject-matter or even of method. The artist's purpose is to increase appreciation and hence the appeal of the product of his genius is primarily to the emotions and will rather than to the understanding. The aim of the man of science, on the contrary, is to gain practical control; hence his appeal is primarily to the intellect, and his objective statement in terms of impersonal causes and effects or colorless mathematical equations. Guido Reni's "Aurora," as an art object, is experienced in terms of its own qualities as a beautiful painting; but if I were an art dealer and dependent for my living upon the sales of copies of this picture, and had my rooms stocked with them, it would come to be experienced in terms of a catalogue-number and a price-list, over-individual and emotionally indifferent items of information which are useful just by reason of this elimination of the personal factor. Here the esthetic is subordinated to the practical interest. Similarly in science the artistic is subservient to the intellectual and logical demands. But in the case either of the man of science or the creative artist a smug intolerance is suicidal. As Hamerton has said, "The very greatest of all dangers to our art, if not the only danger to it, is the stoppage of its scientific development: in other words, its abandonment of the pursuit of truth."

The poetry of things is not opposed to the philosophy of things. That there is no real antagonism between art and science in their fundamental purpose, that both are seeking reality in its highest form, has been repeatedly expressed by the deepest thinkers. Wordsworth said: "Poetry is the breath and finer spirit of all knowledge; it is the impassioned expression which is in the countenance of all science.'' And Edward Caird says: ''Philosophy is, in the end, at one with poetry.''

The merit of philosophy and science is validity; the merit of poetry, of art, is immediacy. In the former, relations are explicit; in the later, implicit; but they are operative in both cases. In the former, the discrete elements are comprehended in an analytic survey of the whole; in the latter, the elements are apprehended in a more immediate syncrete or concrete synthesis. In science and philosophy the meaning comes to be identified more with the words and terms themselves, with the instruments of thought; in art and poetry the meaning lies more in the context, between the lines. In the former case the meaning is conveyed in terms rather of visual and auditory imagery and words of borrowed derivation; in the latter case the meaning is surcharged with emotion, with organic and tactile-kinesthetic imagery, and thus finds expression in terms of the mother-tongue. The reason why some minds prefer the poetical to the scientific or philosophic statement of the truth is a matter of temperament—their characteristic mode of judging and evaluating situations in terms of the non-verbal rather than the verbal and formal symbols.

The artist sometimes affirms that the scientific spirit never goes with artistic production, and brings forward ''confessions'' like that of Darwin to point his argument. ''He holds that he hears voices and has visions which tell of realms in which science can have no power, and concerning which she can teach him nothing.'' And the widest-minded men of science appreciate a certain truth in his contention so far as the present status of art and science is concerned. But is it fair to say that Darwin had lost the esthetic sense? Is it not true rather that his esthetic field had shifted to regions in which but few of his fellows could or would care to follow him? Darwin was transforming nature into a work of art on a scale the professional artist, except a few choice spirits like Goethe, never dreamed of. Is it surprising that he found much of what around him was lauded as art disgustingly cheap in comparison? ''Science,'' as a recent writer has said, ''like a child pulling a flower to bits, is apt . . . to dissect more than it constructs, and to lose in its analysis the vision and harmony which the artist has ever before his eyes. Perhaps, however, if the artist has patience, he would often find that science restores the unity with more significance and more beauty in it than it had before. . . . The modern botanist is in a very real sense more aware of the Dryad in the tree than the Greek could be.''

Binet in his ''L'Âme et le Corps'' has called attention to the fact that our scientific conceptions of the world have been built up in terms of the eye and hand. The atomic theory is visual in conception and the modern scientific doctrines of energy and motion and vibrations of an elastic-solid ether are a combination of visual and tactile-kinesthetic images. We have forced all the rest of our immediate sensational experience into these terms when we seek to understand and explain. But, as this writer points out, there is no reason why we should describe a tuning-fork in terms of how it looks or reacts to touch any more than in terms of the sound it produces or in terms of the emotions this sound arouses. So of the ear. What is the ear in terms of the function of the ear? We ordinarily describe it scientifically in terms of sight and touch. What is the ear in its own terms? What is the nose in terms of odor? It is intelligible, perhaps, that we should interpret the stimulus to vision in terms of vision. But why do we persist in interpreting the stimulus to smell, to hearing, to the temperature sense, and the rest, in these same terms? Has not the artist, then, a certain justification in his feeling that science is arbitrary and abstract and unreal, and that his own pursuit is a more genuine envisagement of the real?

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REVIEWS AND ABSTRACTS OF LITERATURE

Consciousness. HENRY RUTGERS MARSHALL. New York: The Macmillan Co. 1909. Pp. xv + 685. $4.00 net.

This volume, the author tells us, is the elaboration of a preliminary sketch of systematic psychology completed in 1891 in connection with his more detailed discussion of the topics *Pain, Pleasure,* and *Æsthetics.* The aim of the book is to present to the reader "not so much an array of newly discovered facts, but *rather a special manner of viewing consciousness as a whole,*" this conducing, in the author's opinion, to greater clarification of the conceptions of mental life and to a more orderly treatment of its problems. We have thus before us not an arrangement of facts, but rather the presentation of the various aspects of a complex system which shall be capable of receiving facts and giving them their meanings.

The volume is divided into three books entitled, respectively, Of Consciousness in General, The General Nature of Human Presentations, and The Self. Much of the material of the volume has already appeared elsewhere in the form of articles and discussions, but here for the first time this material is articulated into one organic structure.

The root from which the entire system springs is the assumption of a thoroughgoing parallelism, a complete "neururgic and noetic correspondence." The systemic character of both fields is insistently urged and the analogy of the wave is drawn upon unremittingly. Major and minor